Environmentalists Push for Tougher Regulation of Oil and Gas Waste

Romany Webb August 28, 2015

A coalition of 7 environmental groups this week gave notice of their intention to sue the U.S. Environmental Protection Agency ("EPA") for failing to update its rules for the disposal of wastes resulting from oil and gas production. Concern over the adequacy of EPA's waste disposal rules has grown in recent years, due to the boom in hydraulic fracturing ("fracking"), which produces large volumes of often toxic waste.

During fracking, a mixture of water, chemicals, and a proppant is injected underground at high pressure to fracture the rock, to enable the flow of oil and gas. When the pressure used to inject the mixture is released, some of the fluid returns to the surface, during what is known as the "flowback" period. This period typically lasts 2 weeks, during which time 5 to 50 percent of the fluid originally injected into the well may return to the surface, depending on local geology (this fluid is often called "flowback fluid). Return flows continue as oil and gas is pumped from the well (in the form of "produced water"). (In this blog, the term "wastewater" is used to refer to both flowback fluid and produced water.)

Flowback fluid and produced water contain many potentially harmful constituents, including chemicals used during fracking, as well as materials occurring naturally in the rock formation. The waste typically has a high mineral content, often containing barium, calcium, iron, and other salts and metals that have leached from the rock. It may also contain dissolved hydrocarbons, such as methane and naturally occurring radioactive materials, including radium isotopes. These materials, if not carefully managed, can endanger public health and cause environmental damage.

In recent years, as oil and gas production has risen due to the expansion of fracking, waste volumes have increased. A recent study by Environment America found that wastewater volumes in the Marcellus Shale (underlying Pennsylvania, West Virginia, and Ohio) increased 6 fold between 2004 and 2011. By 2012, in the Pennsylvania portion of the Marcellus shale alone, 1.2 billion gallons of wastewater was produced by fracking. In other states, wastewater volumes are even higher. In Texas, for example, fracking is estimated to produce over 200 billion gallons of wastewater annually.

Most of this wastewater is disposed of via underground injection into wells drilled into porous rock formations. This disposal method has been favored by both industry and regulators as, when performed with appropriate safeguards, it poses little risk to the environment. Since the waste is sequestered underground, it is unlikely to contaminate water or soil, reducing the risk to public health. Sometimes however, problems do occur. Last year, the California State Water Resources Control Board found that nearly 3 billion gallons of fracking wastewater had been disposed of in freshwater aquifers, contaminating water that could have been used for drinking or irrigation. This has led to calls, from environmentalists and others, for tougher regulation of wastewater disposal.

Currently, the underground disposal of wastewater is regulated through EPA's Underground Injection Control Program (UIC) Program. The UIC Program, established under the Safe Drinking Water Act (42 U.S.C. § 300f et seq.), aims to protect public health by preventing the contamination of underground sources of drinking water. To this end, it establishes minimum requirements for the underground injection of liquid wastes, including oil and gas wastewater.

Under the UIC Program, underground injection wells are grouped into six classes, each subject to differing requirements. The most stringent requirements apply to Class I wells, which are used to disposed of hazardous waste, as defined in the Resource Conservation and Recovery Act (RCRA) (42 U.S.C. § 6901 et seq.).

Enacted in 1976, the RCRA gives EPA broad authority to control hazardous wastes from cradle-to-grave, so as to "promote the protection of health and the environment." Seemingly at odds with this objective, however, the RCRA exempts certain wastes with hazardous characteristics from EPA control. By way of example, in 1980, Congress amended the RCRA to conditionally exempt oil and gas wastes pending review by EPA. EPA was required to conduct a review the human health and environmental effects of oil and gas waste and, based on that review, to determine whether such waste should be regulated as hazardous wastes. EPA issued its determination in 1988, after an extensive review of the nature of oil and gas waste and the need for additional regulation thereof.

EPA determined that the regulation of certain oil and gas wastes, including drilling fluids and produced water, as hazardous waste under the RCRA was not warranted. This determination was based on, among other things, "the adequacy of existing…regulatory programs for controlling these wastes." EPA found that state regulatory programs were "generally adequate" for managing oil and gas waste and committed to working with the states to further strengthen their regulations. EPA concluded that additional federal regulation, under the RCRA, would not be economical given the large volume of waste generated by the oil and gas sector.

As a result of EPA's determination, even when oil and gas wastewater exhibits hazardous characteristics, it need not be disposed of in Class I wells. Rather, such wastewater may be disposed of in Class II wells, which are subject to fewer regulations. Some other wastewater disposal methods, including disposal on land, are not subject to any federal regulation.

The exception of oil and gas wastewater from federal hazardous waste regulations leaves the states free to regulate land disposal as they see fit. Many states currently permit the disposal of wastewater through land- and/or road-spreading. In Texas, for example, certain drilling fluids used in oil and gas production may be disposed of through land-framing whereby the fluid is mixed with soil and then applied to the land. Colorado allows produced water from oil and gas wells to be used for roadway pre-wetting and anti-icing purposes.

Concerned that these disposal practices may lead to land and/or water contamination, environmental groups want EPA to reconsider its decision not to regulate oil and gas wastewater as hazardous waste under the RCRA. The groups note that section 2002(b) of the RCRA (42 U.S.C. § 6912(b)) requires EPA to review its regulations "not less frequently than every three years." Despite this, however, EPA has not conducted a review of its regulations for oil and gas wastewater since 1988. In the intervening years, oil and gas production has expanded dramatically, leading to increased wastewater volumes. It is, therefore, high time that EPA reviewed the adequacy of existing regulations for dealing with such wastewater. If it doesn't, environmentalists will sue.

Colorado | epa | fracking | hazardous waste | oil and gas | Pennsylvania | RCRA | Resource Conservation and Recovery Act | Texas | underground injection | wastewater

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